

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 07 MAY 2004

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Applicant's or agent's file reference 02FEKM002	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/KR2002/001431	International filing date (day/month/year) 27 JULY 2002 (27.07.2002)	Priority date (day/month/year) 27 DECEMBER 2001 (27.12.2001)
International Patent Classification (IPC) or national classification and IPC IPC7 G06F 1/16		
Applicant LG ELECTRONICS, INC. et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 22 JANUARY 2003 (22.01.2003)	Date of completion of this report 13 APRIL 2004 (13.04.2004)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer UHM, In Kwon Telephone No. 82-42-481-5712 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2002/001431

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages 1-9, as originally filed
pages, filed with the demand
pages, filed with the letter of
- ☒ the claims:
pages, as originally filed
pages, as amended (together with any statement) under Article 19
pages, filed with the demand
pages 10, 11, 12, 13, filed with the letter of 15.03.2004
- ☒ the drawings:
pages 1/6- 6/6, as originally filed
pages, filed with the demand
pages, filed with the letter of
- ☐ the sequence listing part of the description:
pages, as originally filed
pages, filed with the demand
pages, filed with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheet

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION

International application No.

PCT/KR2002/001431

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-19	YES
	Claims		NO
Inventive step (IS)	Claims	1-19	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-19	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The following documents are referred to :

D1 = closing control and opening free assembly for a hinge connection

US 5598607 A(1997.02.04).

D2 = control assembly for a hinge connection US 5682645 A(1997.11.04).

Novelty

None of the above documents reveals the configuration of the braking members, described in the claims. Therefore, the invention according to claims 1-19 is considered to be novel.

Inventive step

This claimed invention relates to a hinge structure for a flat visual display device which functions as a structure between the flat visual display device and a supporting portion of the display device so as to allow both of the display device and the supporting portion to smoothly operate as well as readily adjust braking force applied thereto owing to frictional force.

D1 teaches a closing control and opening free assembly for a hinge connection between a first segment and a second segment.

D2 reveals a control assembly for a hinge connection between a first segment and a second segment.

Neither D1 or D2 teaches the characteristics of this invention, that its braking members are cylindrically configured and inserted in the circular contact face between the outer circumference of the rotational shaft and the inner circumference of the braking housing.

Therefore, this invention is considered to involve an inventive step.

Industrial Applicability

The subject matter of claims 1-19 fulfills the requirements of Article 33(4) PCT because it is useful.

Claims

1. A hinge structure for a flat visual display device comprising:
a fixed plate and pivotal plates respectively fastened to the flat visual display
5 device and a supporting portion for straightening the flat visual display device;

rotation shafts with first ends placed in the side of said fixed plate and second
ends placed in the side of said pivotal plates, said first or second ends being fixed to
allow relative rotational movement between said fixed and pivotal plates;

braking members provided around said rotation shafts for applying braking
10 force; and

braking housings provided around said braking members and with first fixed
ends opposite to the fixed ends of said rotation shaft for applying braking force to faces
contacting with said braking members,

wherein said braking members is cylindrically configured and inserted in said
15 circular contact face between said outer circumference of said rotation shaft and said
inner circumference of said braking housing.

2. The hinge structure according to claim 1, wherein said pivotal plates are
provided at both ends of said fixed plate.

3. The hinge structure according to claim 1, further comprising:

non-circular fixing portions each provided in the pivotal side at one end of each
of said rotation shafts facing each of said pivotal plates for fixing said each rotation
shaft to said each pivotal plate, and

25 non-circular shaft-supporting portions each provided in said each pivotal plates
for insertionally receiving said each fixing portion in the pivotal side.

4. The hinge structure according to claim 1, wherein each of said braking
housings further includes a stopper guide radially extended from one end of said each
30 braking housing for fixing said each braking housing to said fixed plate.

5. The hinge structure according to claim 1, wherein each of said braking
housings is inserted and extended by one side into a vertical plane of said fixed plate to
form a stopper guide fastened to said vertical plane via riveting.

6. The hinge structure according to claim 1, further comprising a washer in the contact faces between each of said rotation shafts and each of pivotal plates to restrict noise and abrasion.

5 7. The hinge structure according to claim 1, wherein said braking members are made of engineering plastic.

8. A hinge structure for a flat visual display device comprising:
a pivotal plate and fixed plates respectively fastened to the flat visual display
10 device and a supporting portion for straightening the flat visual display device;
rotation shafts with first ends placed in the side of said fixed plate and second
ends placed in the side of said pivotal plates, said first or second ends being fixed to
allow relative rotational movement between said fixed and pivotal plates;

braking members provided around said rotation shafts for applying braking
15 force; and

braking housings provided around said braking members and with first fixed
ends opposite to the fixed ends of said rotation shaft for performing relative movement
in respect to said rotation shafts to apply braking force to faces contacting with said
braking member;

20 stopper guides each integrally provided in one side of each of said braking
housings and having a projection-receiving groove in the outer circumference; and

stoppers each having a folded stopper projection for being inserted into each of
said stopper guides, each of said stoppers being fitted around the end of each of said
rotation shafts at one side of said each stopper guide for restricting the angle of relative
25 rotation between said each rotation shaft and each of said braking housings.

9. The hinge structure according to claim 8, wherein each of said rotation
shafts is fixed to each of said pivotal plates.

30 10. The hinge structure according to claim 8, further comprising washers
provided in the contact faces between said stopper guides and said stoppers.

11. The hinge structure according to claim 8, further comprising:
fixing portions each provided around each of said rotation shafts in the fixing
35 side, around which each of said stoppers is fitted, for allowing said each stopper to

identically operate with said each rotation shaft; and

shaft-supporting portions each identically configured with each of said fixing portions in the fixing side for allowing said each stopper to be fitted around said each fixing portion and identically rotate with said each rotation shaft.

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12. The hinge structure according to claim 8, further comprising:

fixing ends each axially extended from one end of each of said rotation shafts around which each of said stoppers is fitted; and

anti-release members each fitted around said each of fixing ends for stably
10 supporting the position of said each stopper.

13. The hinge structure according to claim 12, wherein each of said anti-release members has a hole into which said each fixing end is inserted and at least two folded faces which are folded in an orientation of inserting said each fixing end.

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14. The hinge structure according to claim 8, wherein said projection receiving groove is positioned in a pivoting range of the flat visual display device.

15. The hinge structure according to claim 8, wherein said braking members
20 are made of engineering plastic.

16. The hinge structure according to claim 8, wherein said braking housings are respectively fastened to vertical fixing planes of said fixed plate.

25 17. The hinge structure according to claim 8,
wherein each of said stopper guides has at least two first housing-fixing holes;
wherein said fixed plate has second housing-fixing holes aligned in line with
said first housing-fixing holes; and

housing-fastening means for being inserted into said first and second
30 housing-fixing holes for fastening said braking housings to said fixed plate.

18. A hinge structure for a flat visual display device comprising:
a fixed plate and a pair of pivotal plates respectively fastened to a supporting
portion and the flat visual display device;

35 a pair of rotation shafts each provided between said fixed plate and said pivotal

plates and having a first fixed end for allowing rotation of said pivotal plates;

a pair of braking members each provided around each of said rotation shafts;

and

a pair of braking housings each provided around each of said rotation shafts,

5 wherein said braking members and braking housings are fixed at one sides
opposite to said fixed ends of the rotation shafts for generating braking force when said
pivotal plates are pivoted.

10 19. The hinge structure according to claim 18, wherein said fixed ends of the
rotation shafts are riveted into a non-circular shape.